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Quarterly Report I
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AGRICULTURE TECHNOLOGY PROGRAM IN TURKMENISTAN

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PROJECT OVERVIEW

The Agriculture Technology Program has initiated its second year of project activities. The first quarter began with the creation of a work plan for year two (Y2) of the project, a successful delivery of 44 artificial insemination kits for the second generation of Artificial Insemination (AI) training activities, improvement of horticultural training modules and activities, the opening of the first AI Training Center and the birth of the very first calves in Turkmenistan from progeny tested, world class sires.

As part of the two major project objectives (a) improving genetics, education and organizations for private livestock producers, and (b) introducing successful agribusiness practices, Ag Tech procured 20 dewar flasks for storing and transporting semen and liquid nitrogen into all the velayats for veterinarian trainings. The program entered into cost-share agreements for reconstructing a demonstration greenhouse in Dashoguz, constructing the first Greenhouse in the Balkan velayat in Serdar, and examined the possible procurement for water pumps to better irrigate pomegranate fields in the Mahtumkuly Etrap in southeastern Balkan.

The program continues to tailor the training curriculum to the demands of the participating farmers and future AI practitioners and to develop new tools for targeting the Program's main objectives. This includes the production of Turkmen language flyers for the Mary AI Center, reproduction of agricultural articles in Turkmen for greenhouse training participants, and plans for multimedia that will use Turkmen farmers as the centerpiece to advertise new practices in artificial insemination.

The activities completed in first quarter of the second project year helped tie up loose ends from the first year, including procurement of AI equipment for continued velayat trainings. Central to the strategy for sustainability is linking the actors of the value chain from the farmers, to the input providers and finally processors, local market buyers and exporters. AgTech's second year is full of activities designed to ride the momentum of the first year to create a foundation for sustainable development throughout the remainder of the project.

Due to personal reasons, the Chief of Party, Mr. Jeffrey Lamont, resigned effective October 7, 2011. Weidemann Associates quickly acted to make sure no loss of momentum took place and Mr. Charles Yesolitis, formerly the home office Project Manager, was approved for the position and started in the field as of the week of Oct. 24, 2011 and will remain through Year 2 into Year 3 at which time a local Chief of Party will lead the project.

As of December 31, the Ag Tech project has estimated that $1,207,283.20 has been spent of the obligated funds of $2,064,076.

PROJECT ACTIVITIES AND OBJECTIVES

Ag Tech welcomed its first calf from the progeny tested sires, on December 16, 2011. As of December 31, 2011, 4 calves have been born, all male to this point. The calves are prized by the farmers and are being nurtured as best as possible. Based on the majority of successful inseminations taking place in April and May of 2011, the majority of births of the 400 inseminated cows will take place in January through early March of 2012.

Ag Tech has also procured 20 Dewar flasks which will be distributed to trainers from the first set of TOTs and transported back to their velayats where further trainings will take place.

Next Step:

Distribute remaining equipment, including semen, for all 11 trainers to begin their training.

Livestock Component

BREEDING IMPROVEMENT

In Year 1 of the project 11 AI technicians were trained on the highly specialized skills necessary to successfully inseminate cows using imported semen from world class sires bred in the US. The project now has taken several steps forward so that these new trainers can train three to five new technicians this year to provide Turkmenistan with a corps of AI technicians capable to serve the demands of farmers for improved breeds of cattle.

- 44 additional AI kits were procured to equip new trainees with the basic tools required to inseminate cows
- 2280 doses of semen procured for training (70/30 split of Brown Swiss/Holstein breeds)
- 20 10L and five 50L Dewar flasks have been ordered for dual purposes (to arrive Jan. 2012):
    - 1) to equip the new trainers with mobile units for insemination in hard to reach, and
    - 2) for storage and the new and future AI Centers around Turkmenistan
- All trainers have identified three to five new technicians in their respective districts

In December, three trainers began working with new prospective technicians:

Ahal Velayat

- Anna Sariyev is providing training in the Ak Bugday District near Ashgabat, already having provided insemination services for more than 10 households.

Mary Velayat

- Annageldy Yazhanov is providing training in the Tagta-Bazar District (near the border with Afghanistan) and his trainees have inseminated over 30 cows.
- Ammandurdy Khummadov is providing training in the Murgap District and has inseminated at least 10 cows with his trainees.

In December, three trainers began working with new prospective technicians:

Based on Mr. Sariyev's observation that local farmers are unsure about the new breeds, the AgTech project is developing a picture booklet for each trainer so that people can see the new calves that are born and how the quality of the new breeds is superior to the local variety. Meanwhile concerning AI in the Mary Velayat, Mr. Yazhanov has observed, "The farmers here remember AI services during the Soviet Era, and they are now very interested in these new breeds and how beautiful and healthy Brown Swiss and Holstein cows will be in Turkmenistan."

Challenge: The local governments are requiring significant paperwork complicating the efficiency of project breeding activities. One major challenge is that no new licenses are being issued at the present time for those new practitioners in the industry, although this is believed to be a temporary issue.

Challenge: Although the project has ordered enough doses of semen to inseminate approximately 3000 cows, many doses are lost in the training process, so realistic expectations for new cattle from procured semen are closer to 1500.

ESTABLISHMENT OF ARTIFICIAL INSEMINATION CENTERS

On November 31, 2011 AgTech marked its first AI training Center's Grand Opening thanks to a partnership with local stakeholders in the Mary Velayat. About 40 people were in attendance at the event, including all 11 trained AI trainers, two members of the press, a representative from the Union of Entrepreneurs, several local farmers and USAID representatives & AgTech project staff. The center included laboratory and storage equipment that will be helpful in providing training resources for AI practitioners.

One of the press representatives was Mr. Ovez Bagshy, Senior Editor for the Taze Oba Agricultural Magazine. Mr. Bagshy wrote an article in December's edition of the

Next Step:

Conclude search for Ahal partner and begin exploring options for an AI Center in Dashaoguz by working closely with lead farmers such as Sadulay Rozmetor AgroFarm.

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- *Mr. Yazhanov*

magazine dedicated to the AI Center's Grand Opening event, in which he commented, "I can see that the work that the USAID Agriculture Technology Project is doing will yield positive results in the near future. Because of this new center, farmers, entrepreneurs and households will all have a greater ability to own improved breeds of cattle, which will mean increased quality and quantities of dairy and meat production."

The project has identified three potential partners for its 2nd AI Center in the Akhal Velayat near Ashgabat; however, those relationships have not yet solidified into partnerships for various reasons. In one case, the interested party wanted to focus on horse breeding as opposed to dairy/meat cattle.

Challenge: Interested partners have connections only to government-owned property, whose use in implementation may prove difficult due to complications with using public property for private sector activities.

FEED DEMONSTRATION

In late November the project met with Taze Ay, a local dairy start-up in Mary Velayat, with whom the project would like to conduct a feed demonstration. The activity is designed to last three months to illustrate how a healthy, consistent feed will help even local varieties produce higher quality and quantity of milk than current levels suggest. In addition to working with this medium-sized dairy processor and their supplying farms, there will also be a control group in Ahal that the AgTech staff can oversee to ensure that results are accurate.

CHALLENGE: The largest challenge has come in identifying the best inputs available which can also be replicated in the future by local farmers. Sources of feed additives have been identified in Turkey and Ukraine, but complications with import regulations make them less than ideal for replication and mass production for the industry.

Using expertise from University of Wisconsin, a simple forage example is being planned so that what the project does, the private sector can easily replicate at minimum cost. An input supplier has been identified in Ahal, Mr. Ovezgeldy Orazmuradov, who has a shipment of Jivina brand vitamin/mineral premix arriving in January from which the project plans to purchase 500kg initially to supplement the mix, along with feed grade tricalcium phosphate.

The project is nearing a deal to have Shaoli Farm support the mixing of the ingredients for the demonstration. Their farm also uses the Jivina mix and has some of the more productive dairy cattle in the country. With these local partners, and the organization provided by AgTech, the project will examine dairy yields and produce multimedia in order to empower AI technicians with promotional materials to encourage best

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- *Mr. Ovez Bagshy, Senior Editor, Taze Oba*

Next Step:

Procure feed ingredients, create premix and distribute feed to participating farmers.

feeding practices at the farm level. The results of this activity will be very telling in terms of the cost-benefit to small holders of using more expensive mixes as opposed to raw forage alone.

LIQUID NITROGEN PRODUCTION

Chevron has promised that the project will receive $150,000 in supplemental funding for the year. Until this money is processed, the procurement of liquid nitrogen (LN) producing equipment has been put on hold. The project expects full resolution of this delay in Q2.

Next Step:

Identify housing partner for LN equipment and complete all related environmental compliance procedures to prepare for procurement.

VETERINARIANS WITHOUT BORDERS EXTENSION SERVICES

AgTech is not only providing herd management and AI training, but also seeking to encourage the improvement of animal hygiene and nutritional intake through a private entrepreneurial business model devised of training veterinarians and working with local partners, which will help expand the quality of dairy cows and their milk production throughout Turkmenistan.

To focus herd management techniques on Turkmenistan's current stage of development, AgTech met with the President of Veterinarians without Borders, Dr. Thomas Graham, to identify a potential expert for conducting a two and a half week farm management assessment and veterinary training program designed to link veterinarians as extensions specialists with the farms they serve. Veterinarians without Borders will provide cost-effective recommendations for improving the local farms and their dairy production for farm management and good animal hygiene.

Next Step:

Initiate consultation in the field and prepare a full itinerary for her assignment, including preparation of the participating farmers, veterinarians and dairy processors.

Horticulture Component

GREENHOUSE IMPROVEMENT PROGRAM

The AgTech project in its first year saw 70 greenhouses either constructed or renovated for better performance in horticulture production, mainly for tomatoes and cucumbers. After the first quarter of the project's second year, these numbers continue to climb with an additional 37 greenhouses built or reconstructed to better specifications:

- Ahal – 13
- Mary – 3
- Lebap – 20
- Balkan – 1

All of the greenhouse activity of the project to this point had focused on three regions: Ahal, Mary and Lebap. Now the project's activities are expanding the remaining two regions in Balkan and Dashoguz. The project contributed $4,000 to each demonstration greenhouse project, while the remaining costs were covered by the owners. This meant USAID provided a 39% cost share in the Balkan and a 26% cost share in Dashoguz. The greenhouse in Balkan has been completed and an opening seminar is prepared there for January 10, 2012. Meanwhile, the Dashoguz greenhouse is expected to be complete by February and hold its first seminar shortly thereafter later in the month.

It is the project's hope that recently built infrastructure for a more consistent supply of gas and water in the Serdar District of the Balkan will enable new farmers to emerge from an otherwise barren area of the country where local produce costs 25% or more compared to other urban areas of Turkmenistan. It is a local food security issue in that prices far exceed salaries, and hopefully these new farmers will be able to provide more employment opportunities and price stability in the local market.

Similarly, in Dashoguz, the construction required for the more northern climate is different than that required for the Ahal, Mary and Lebap regions. However, many farmers are already involved in horticulture practices, so it is with anticipation that the project will find similar results here compared to the increased production already observed in Mary and Lebap.

HORTICULTURE PRODUCTION & IMPROVEMENT

Last year the project introduced farmers in different regions to selected seed varieties from German company Satimex. These seeds were planted and this summer and fall the results of the initial trails were gathered and analyzed. Generally speaking, across the board all cucumbers did quite

Next Step:

Drip Irrigation – there are still many greenhouses that cannot rely on a steady supply of water through the calendar year. Installing drip irrigation will allow for increased control on production, while also providing a safer mechanism for pesticide application and a more environmentally sustainable alternative to traditional greenhouse irrigation methods.

well, with three of six varieties garnering particular praise by the farmers. Nurmurad Nepisov, a farmer in Mary observed, "The cucumber seeds germinated almost 100% for all varieties, and in particular we found that the SX-277-F1 seed produced beautiful fruit!" Tomatoes also germinated well, but after beginning to mature the plants showed signs of disease and withering. Other vegetables did quite well including radishes, carrots, and onions.

The project has communicated with Satimex about the results and the next step will be to begin working on a formal registration of the seeds in Turkmenistan to facilitate future imports to farmers and input providers. Although these particular tomato seeds do not appear ideal for Turkmenistan, the project has learned that those supplied from Holland in the informal markets have become the staple seed that all farmers are using with great success so far.

"The cucumber seeds germinated almost 100% for all varieties, and in particular we found that the SX-277-F1 seed produced beautiful fruit"

- Nurmurad Nepisov

In addition to seed inputs, the project is working to help farmers understand what their soil composition is so that they can calculate the correct amount and type of fertilizers for optimal plant growth. Ms. Oguljamal Bazarova was hired as the soil test specialist and has used soil test kits provided by the project to test such greenhouse soils for their the pH and levels of nitrogen, phosphorus and other essential elements found naturally in fertile soil. She has specifically trained the input providers in Ahal, Mary and Lebap (i.e., Hemra Orazgeldiyev, Beshim Tanniyev, and Islam Annamuradov) so that they may provide this extension service as an added value to market their input products and services, which ultimately will lead to more productive small holder farmers and wider scale project impact.

By the end of Q1 in Year 2, 211 new farmers have attended project seminars, with an approximate 25/75 split of female/male participants. Throughout the project, participants in all trainings have continued to ask for international support and knowledge in one critical area: pest control. With the pending approval of the project's PERSUAP, the project intends to bring in a short-term international specialist who can address these concerns. This consultancy is scheduled for March 2012 (Q2) based on the consultant's availability, which coincides well with the conclusion of the initial soil test seminars that should help prepare farmers for the upcoming growing season.

The Horticulture training sessions focused on soil test seminars in Akhal and Lebap, greenhouse construction, plant care, soil care and climate control for an optimal greenhouse environment. The participants are requesting further information on plant diseases their prevention and treatment techniques.

<u>Next Step:</u>

Develop a Turkmen language pocket guide for tomato and cucumber greenhouse producers on soil care, plant care, pesticide application and post-harvest handling.

POMEGRANATE DEVELOPMENT

Turkmenistan is among a few countries in the region where pomegranates grow native to the land. With a deep and rich history in this high value crop, the project has taken the first steps to see how USAID funding can support farmers who may be able to benefit from such a high demand crop, both locally and internationally. Considering research done by previous USAID work in Turkmenistan, AgTech knew that orchards of pomegranates were kept in the southwestern corner of the country, where the Chendir and Sombar Rivers originating in the mountains in Iran supply water naturally to the region for crop cultivation in Turkmenistan. However, these rivers run dry by the summer months, leaving crops susceptible to disease and poor development of the fruit to maturity.

In December, AgTech staff took an initial visit and met with several interested farmers whose pumps have become inoperable to irrigate the land in the dry, hot summer months. Based on the first trip and the willingness of the famers to collectively invest, the project will consider proposals for new support for new pumps that can lead to potentially double or triple current yields, which will have a direct positive income effect on almost 30 farmer families in the region. Additionally, identifying their buyers and local tradesmen who take the fruit for export will also benefit from increased production and a revitalization of the pomegranate industry in the Balkan.

CHALLENGE: Because of the efforts put into the greenhouse activities in Balkan and Dashoguz, the multiple trainings planned for soil testing**,** and moving Balkan pomegranate potential activities ahead of schedule (due to timing with the upcoming growing season), the project has not yet commissioned the report on horticulture production and trade. This will be addressed in Q2

PMP TARGETS AND DEVIATIONS:

Performance Indicator Monitoring

Performance Indicator	Performance Indicator Definition	Year 2 Proposed	Year 2 Actual (first quarter)
50% increase in HH income	*Horticulture HHs and farms increasing income by 50%*	*250*	*11*
	Livestock HHs and farms increasing their income by 50%	*250*	*N/A*
Rural HHs benefiting directly from USG Interventions	*Number of beneficiaries and training participants, disaggregated by gender and region*	*1000*	*211*
Farmers, processors and others who have adopted new technologies or management practices	*Number of beneficiaries and training participants using new technologies or practices as introduced by the project, disaggregated by gender and region*	*500*	*94*
Quantity of produce grown and/or sold	*Farmers, buyers or labs are using AI, improved feed, vet services, greenhouses, drip irrigation, grading, post-harvest packaging practices training*	*Baseline + 70 %*	*Baseline + 6%*
Value of produce sold to local and international markets	*USD value of goods in livestock and horticulture sector disaggregated by product and velayat*	*Baseline + 20%*	*Baseline + 6%*
Number of agriculture-related firms benefiting directly from USG supported interventions.	*Number of input providers and buyers strengthened to provide farmers with necessary inputs.*	*50*	*12*
Number of greenhouses constructed or improved	*Number greenhouses constructed and/or renovated in each veleyat*	*100*	*37*
Land under improved technologies or management practices	*Indicates the number of ha under greenhouse or livestock project activities (existing and new land).*	*500*	*4*

Number of Training Participants in Q1 of Year 2 (disaggregated by gender and region)

Region	Female	Male	Total
Akhal	2	32	34
Mary	22	71	93
Lebap	30	54	84
Balkan	0	0	0
Dashoguz	0	0	0
Sub total	**54**	**157**	**211**

Number of Greenhouses Constructed and/or Renovated in Each Velayat

Region	Number of constructed and reconstructed greenhouses	Total Project To Date
Akhal	13	25
Mary	3	45
Lebap	20	36
Balkan	1	1
Dashoguz	0	0
Total:	**37**	107

Production and Value of Horticulture (Tomato and Cucumber) in Each Velayat

	Baseline		**Year 2 Results (to date)**		**Change (%)**	
	Yield (tons)	*Income ($)*	*Yield (tons)*	*Income ($)*	*Yield*	*Income*
Ahal	3.13	$ 2,219.14	3.57	$ 1,656.12	14%	-25%
Mary	2.86	$ 1,323.89	2.55	$ 1,598.85	-11%	21%
Lebap	3.7	$ 2,148.22	4.16	$ 2,756.42	12%	28%
Totals	**9.69**	**$ 5,691.25**	**10.28**	**$ 6,011.39**	**6%**	**6%**

M&E Methodology: Questionnaires are the basis for information, including baseline, current data available and data from future harvests/sales. We are following all farmers who participated in the first year to establish the baseline results. Future additional growers (e.g., new greenhouses built based on project recommendations) will be added to the results as they record their harvests and income. Each velayat has a lead farmer who is responsible for collecting questionnaires on a monthly basis for the project. The AgTech M&E Specialist compiles the information and makes calculations accordingly.

Variations between the data collected from each Velayat are explained below:

The following reasons explain the income loss compared to baseline figures in Ahal:

1) Winter arrived one month earlier this year.
2) Farmers who planted mostly tomatoes in their greenhouses in first week of August 2011 experienced mostly cloudy days throughout November and December, limiting production.
3) Tomato plants received less than optimal photosynthesis due to a lack of sunlight from cloudier weather than usual for this region.
4) Many who planted tomatoes did not bear fruits; (more than 50% farmers reported production losses).
5) Despite the losses and weak quality of the fruit, overall aggregate production increased in large part due to project recommendations.

The Mary Velayat experienced lower yields, but higher incomes for the following reasons:

1) It was unseasonably cold in October 2011, and most greenhouse farmers lost their yield in large part due to low and inconsistent gas pressure to keep good climate control in the greenhouses.
2) Mary greenhouse growers mostly sold their tomatoes to Ahal, Balkan regions and a small amount to Kazakhstan where higher prices resulted in increased income.

The Lebap Velayat reported the following:

1) Increased yield and income is due in part to calculations based on the whole 2011 season, as few farmers are growing produce from October to December. (Lemon growers and flower growers are excluded from the above table, which consist of a big percentage of farmers from Lebap during the fall).
2) About 80% of the reported greenhouse growers in Lebap harvest once a year from April to June, meaning that the cold, cloudy fall did not affect this region as it is Ahal and Mary.
3) Income is higher because their vegetables sell for higher prices in the Dashoguz Velayat.
4) Lebap's soil is naturally different from other regions due to its proximity to the Amu Darya River, giving a more balanced soil pH between 6.5 and 7.
5) The primary disadvantage in Lebap is pests and diseases, from which farmers are suffering more compared to other regions of the country.